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ABSTRACT

The Infant-Infant Contact Code, developed to observe the social behavior in infants, is described. Results from using this scale with nine infants under nine months indicated that contacts between infants are complex in nature, that there are developmental changes in models of encounter, and that babies take different roles in relation to the contact. Differences between baby-adult and baby-baby interactions were noted. In baby-baby interactions, both social and non-social behaviors were present. With adults, the behaviors were social. It was suggested that the study of peer interactions during the first year of life may provide additional information about the development of social interaction. (SBT)

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INFANT-INFANT INTERACTION IN A DAYCARE SETTING[1]

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The study of peer-peer interaction in human beings has been a neglected area of research despite strong indications in the animal literature of the importance of this phenomenon for socialization. The few available studies of infant interactions were conducted, for the most part, during the third decade of this century. Most of this research focused on observing infants in experimental situations (Shirley, 1933; Maudry and Nekula, 1939), with the exception of studies by Buhler (1930) and Bridges (1933), who observed babies in naturalistic, although institutional, settings. There is some information from Israeli kibbutzim (Spiro, 1958), but these data are neither comprehensive nor systematic. In sum, the data emerging from these studies provide only a sketchy picture of the course of very early social interaction.

The data I will present today were collected as part of a larger study of the strategies of social encounter among children during the first five years of life. As a first step in each phase of that study, we are developing comprehensive coding systems for describing social encounters between children. My primary purpose today will be to point out the parameters of the code of infant-

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infant interaction that we have developed and to paint a descriptive picture of the encounters we saw in our sample. Although we found evidence of striking individual differences in patterns of interaction among our babies, we have reported those elsewhere (Lee and Durfee, 1973); I will focus today on broad age-related patterns.

METHOD

Subjects. The subjects for our study were nine infants, seven males and two females. These babies were enrolled in two different groups of the Cornell University Experimental Daycare Nursery. Each group received half-day care five days a week. The babies ranged in age from six to nine months when the study was initiated and had been in the nursery for approximately five months. Thus, they were very familiar with the other babies in their groups.

Procedure. The observations were made over a six-month period by two female observers who worked independently from behind a one-way screen and spent approximately equal amounts of time, i.e., about an hour each day, watching each of the two groups. A running narrative account of specific encounters between two or more babies was dictated into a tape-recorder. In order to record the maximum possible amount of data in a given observation period, we chose not to use time-sampling techniques. Instead, each observer recorded as many encounters as she could. Once she had

finished recording one sequence, she recorded the next sequence that she saw being initiated, although care was taken not to focus exclusively or for long periods of time on a single baby. Examples of contact encounters were obtained for each possible dyad. The two caregivers in each group were instructed to go about their routine duties during the observation period.

The Infant-Infant Contact Code. Working from typed narrative protocols of infant encounters, a code was developed for analyzing the data. While observing the infants, it became apparent that encounters were often not interactional, but, rather, exhibited asocial or instrumentally self-centered qualities. Since so little is known about the precursors to social interaction in children, we felt it important to include these types of encounters in our coding system. Therefore, we chose the term contact, rather than interaction, to describe them, and defined it broadly as any behavior within a distance modality that is directed by one baby to another, or as any behavior within the modality of touch which may or may not be directed to, but which none-the-less impinges upon, another baby.

The contact code contains three categories. A category describing the initiation of contact between two babies, a category describing the dimensions of contact maintenance, and a category concerned with the modes of termination of the contact sequence. The code is designed to deal with contact occurring between two infants, whom we call the target babies. Baby A is the baby who first makes contact;

Baby B is the other baby in the dyad. Our unit of analysis is the contact sequence. It is defined as having an initiation phase, a maintenance phase, a termination phase, and as extending from that point in time when Baby A first makes contact with Baby B to that point in time when the last baby to terminate contact does so.

RESULTS AND DISCUSSION

Data Analysis. The data I will present today are based on 595 protocols of contact sequences. These were analyzed by dyads according to the age of the baby who initiated the encounter, i.e., by the age of Baby A. Age is defined in months, and the data cover the range 6 to 12 months. Since each of the babies interacted with all of the other babies in his group, and since our babies varied in age among themselves, the age of Baby B is most often not the same as that of Baby A. However, he was never more than three months younger or older than Baby A.

Initiation of Contact. In the interests of time, I will focus my discussion of results on the patterns of maintenance behavior that we saw. However, there were a few findings about initiating behavior that deserve mention. First, at all age levels, babies were most likely to contact another baby who was by himself, i.e., not in interaction with an adult or other baby, and who was holding or manipulating an inanimate object. Modes of initiating behavior appeared to change with increasing age -- from visual scutiny of Baby B to approach and exploration of Baby B and his toys to more

clearly social overtures such as a smile or the offering of a toy. This latter type of initiating behavior occurred with any frequency only toward the end of the first year.

Maintenance of Contact. Turning now to the codes dealing with maintenance of contact, we attempted to characterize each protocol as to the type of maintenance activity that predominated during the sequence. In Figure 1 the occurrence of the different types of maintenance activity that we delineated appears to follow a pattern somewhat similar to that just detailed for initiating behavior. That is, younger babies spend a great deal of time just looking at another baby, and do not begin to approach or follow with any regularity until about 8 months of age. At all age levels, once babies are in close proximity, they engage in a great deal of physical contact. They manipulate the same toys and they explore each other's bodies and clothing. At least 60% of the contact sequences at each age level incorporated an inanimate object. Encounters that are predominantly social do not occur with any frequency until Baby A is 11 months of age.

Very often, it was not easy to characterize a protocol on the basis of a single predominant type of maintenance activity, because it was common for babies at all ages except 6 months to incorporate as many as four or five different types into one sequence. And the sequences themselves did not tend to be very long. As data in Figure 2 show, at all ages the contact encounters tended to be either very brief or of only moderate length. By brief, we mean

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very brief -- about 5-10 seconds long; a moderately long sequence lasted between 30 and 60 seconds. Babies engaged in sequences longer than that only a little more than 10% of the time. Thus, what we were seeing throughout the second half of the first year were unsustained encounters, which often incorporated rapidly changing modes of contact.

Although there was no evidence in our data that contact sequences became appreciably longer as babies got older, other parameters of the maintenance did appear to change with age. Referring to Figure 3, which deals with what we term mutuality of contact, you can see that when Baby A was 6 months old, 50% of sequences were one-way contact -- that is, Baby B never got involved at all. This is clearly one end of a mutuality continuum. However, for babies 8 months and older, contact is most likely to be not only two-way, but also simultaneous. This means that the babies are contacting each other at the same point in time -- and this represents the other end of the continuum. Thus, although the length and complexity of the contact sequence do not change much over this six-month span, there are changes of a more qualitative nature.

We also coded both the arousal and the affect exhibited by each baby during the sequence. By arousal, we meant the intensity with which any contact behavior was expressed. We looked at both the highest level of arousal reached by a baby and at the duration with which he expressed any arousal, regardless of its level of intensity. By affect, we meant any expression of positive or negative emotion,

regardless, again, of the intensity with which it was delivered. In the case of all three variables, we find differential patterns for Babies A and B.

Summarizing the information in Figures 4 and 5, at all age levels Baby A was most likely to show sustained arousal during the encounter, whereas Baby B was most likely to show only periodic arousal. Furthermore, after 7 months of age, Baby A was most likely to become highly aroused during the contact, while Baby B exhibited equal probability of expressing low, moderate, or high arousal. Only in the two youngest age groups was Baby B more likely than Baby A to become highly aroused during contact. This suggests that the role the baby plays in the encounter with another infant influences his characteristic reaction to the encounter and that, within limits, the role may be as or more important than the baby's age in this respect. Baby A, as the initiator of the interaction, tends not only to have a more sustained interest in the encounter, but is also the baby who gets the most excited about it. It is noteworthy in this context that we found very pronounced individual differences among babies as to their proclivity for initiating interaction. Some babies are simply more active than others in relation to their peers, even during the first year of life.

We thought, on the basis of these data, that Baby A might also tend to exhibit more emotional involvement in the contact than his partner, but the data in Figure 6 suggest that the opposite is true. Although Babies A and B show equal amounts of positive affect, starting

at 8 months of age, Baby B consistently shows higher levels of negative affect, again suggesting that Baby A plays the more active, perhaps abrasive, role in the contact encounter.

Before turning to a brief consideration of our data on the termination of contact, I would like to mention a type of contact activity that we saw a few instances of toward the end of the first year. This type of behavior, which we termed "playful," appeared to be qualitatively different from any of the other maintenance categories, although it incorporated behavior from them. For example, one of the components of our "locomotor" category was a behavior we called "leading." In this behavior, one baby appeared to try to "entice" another baby to follow him by alternately locomoting away from that baby and then stopping to look back toward the other infant as if to check whether or not he was following. This behavior was always characterized by high arousal and was almost always accompanied by expressions of positive affect. It looked suspiciously to us like the beginnings of the game of "chase."

Termination of Contact. Considering very briefly the data on termination of contact, we found that, although Baby A appeared in many ways to show a higher involvement in the maintenance of contact than did Baby B, Baby A was just as likely to break off contact first. Usually, the stimulus to termination was clear -- for example, the baby was distracted by an object or by another person in the room. Not infrequently, however, the baby's attention just seemed to wander away from the contact, as though the encounter

had lost its appeal. This suggests to us that it is very important to consider maintenance of contact in terms of the types of feedback that the babies are providing to one another.

CONCLUSION

In conclusion, our data suggest that encounters between infants during the first year of life are complex in nature, that there are developmental changes in modes of encounter, and that babies take different roles in relation to the contact. In addition, the encounters that we saw often struck us as being quite different from infant-adult interactions occurring during the same age period. Baby-baby encounters appeared to incorporate non-social as well as social components; other babies often appeared to be treated as much like toys as like social objects. This suggests that the study of peer-peer interaction during the first year of life should provide a means of integrating theoretical concepts and empirical data from these two spheres of infant functioning -- spheres which have traditionally been treated as quite distinct and separate.

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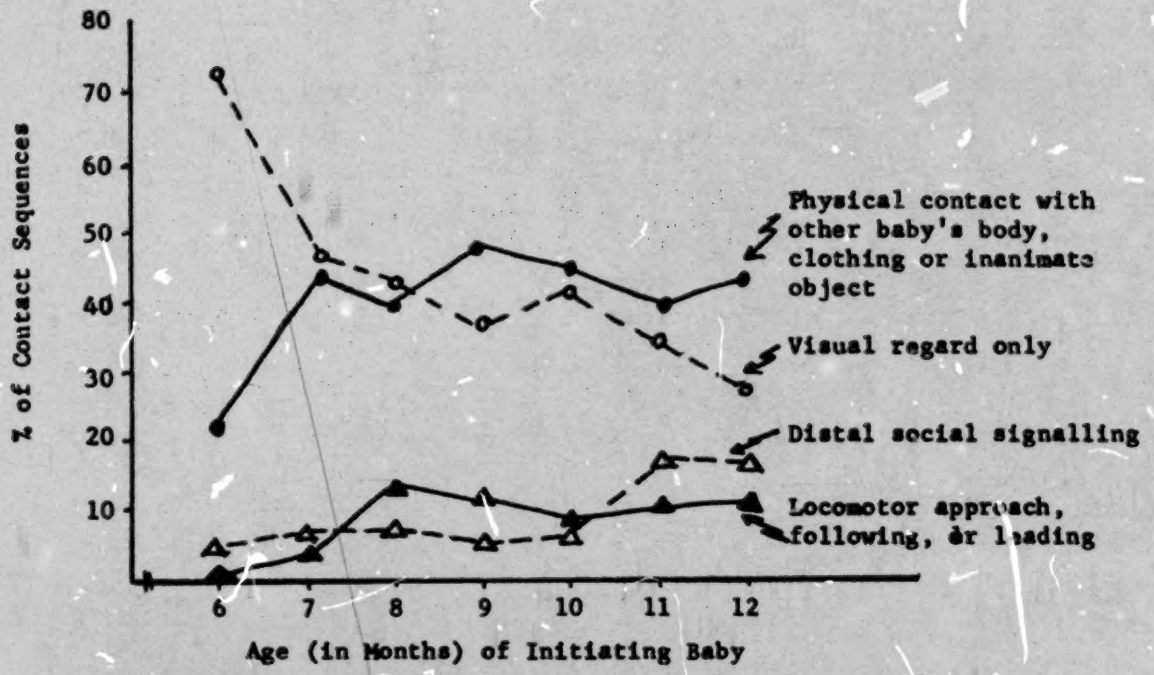

Figure 1. Predominant Type of Activity During Maintenance of Contact

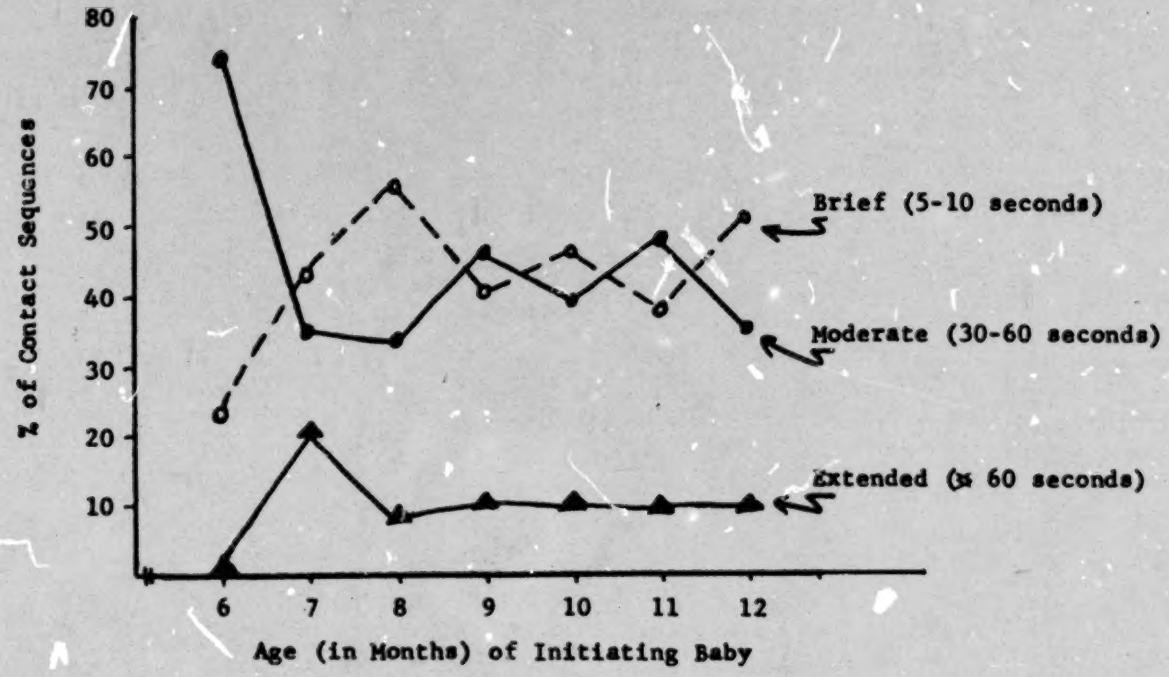

Figure 2. Length of Contact Sequence

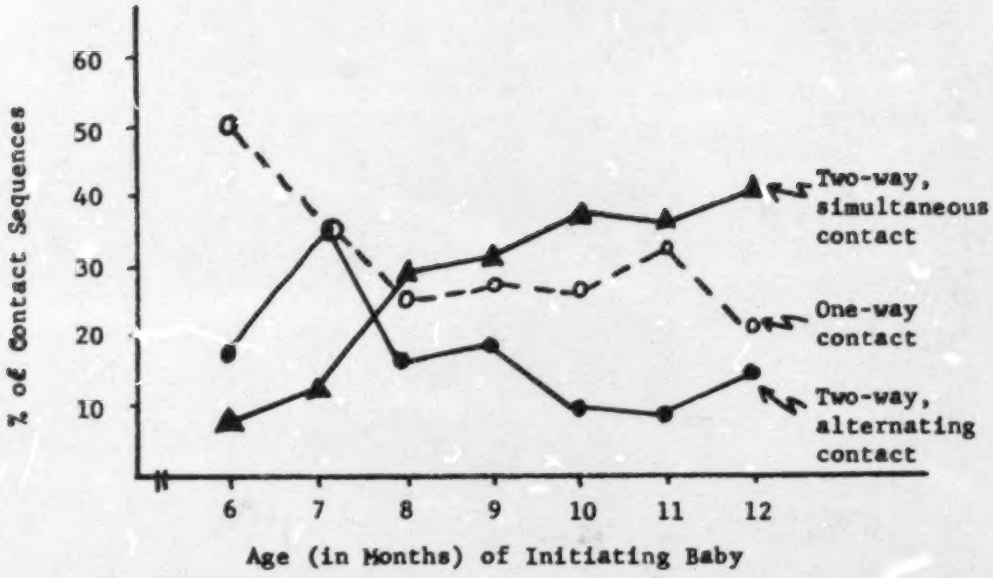

Figure 3. Degree of Mutuality of Contact During Maintenance of Contact

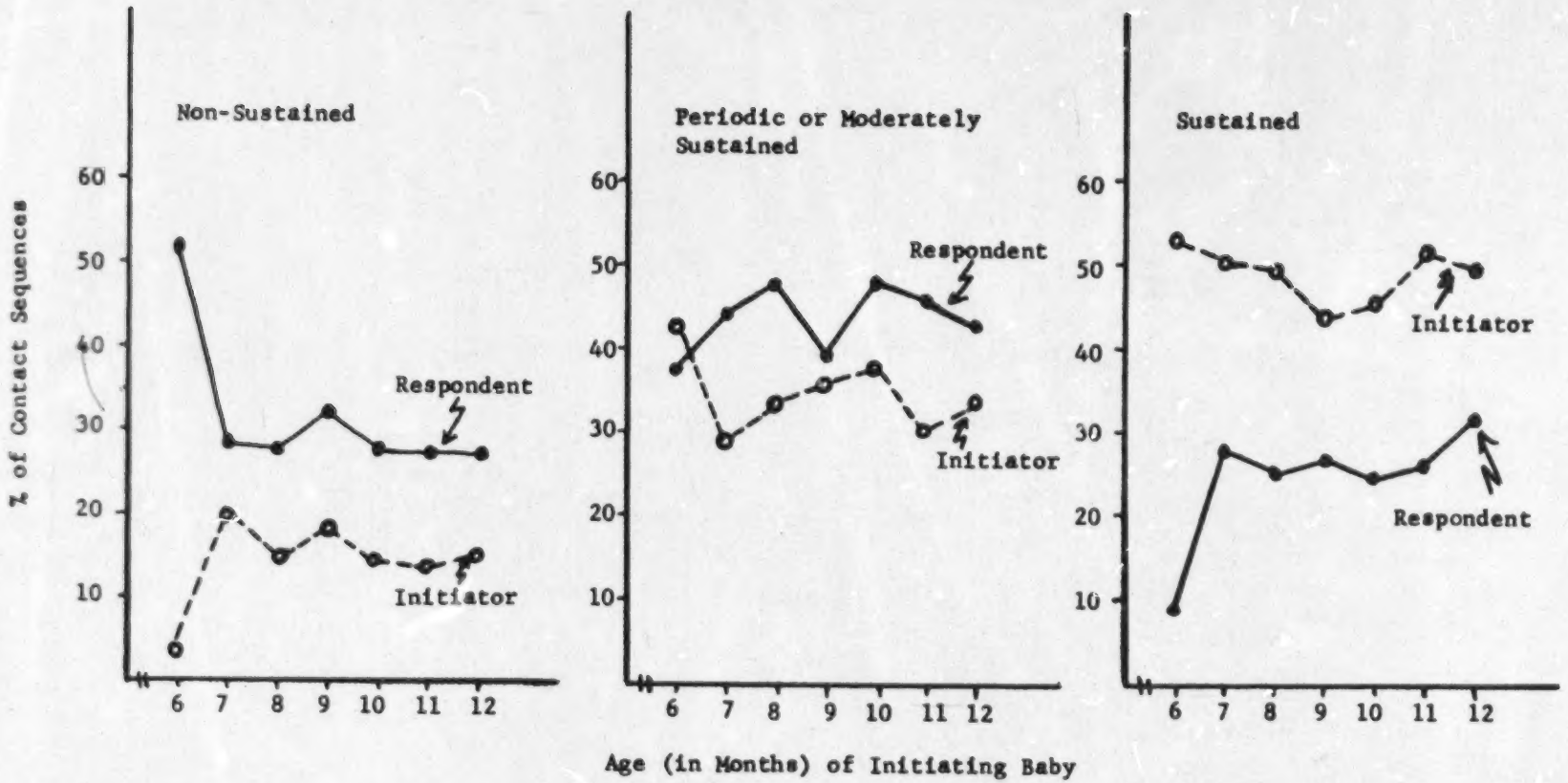

Figure 4. Duration of Arousal During Maintenance of Contact

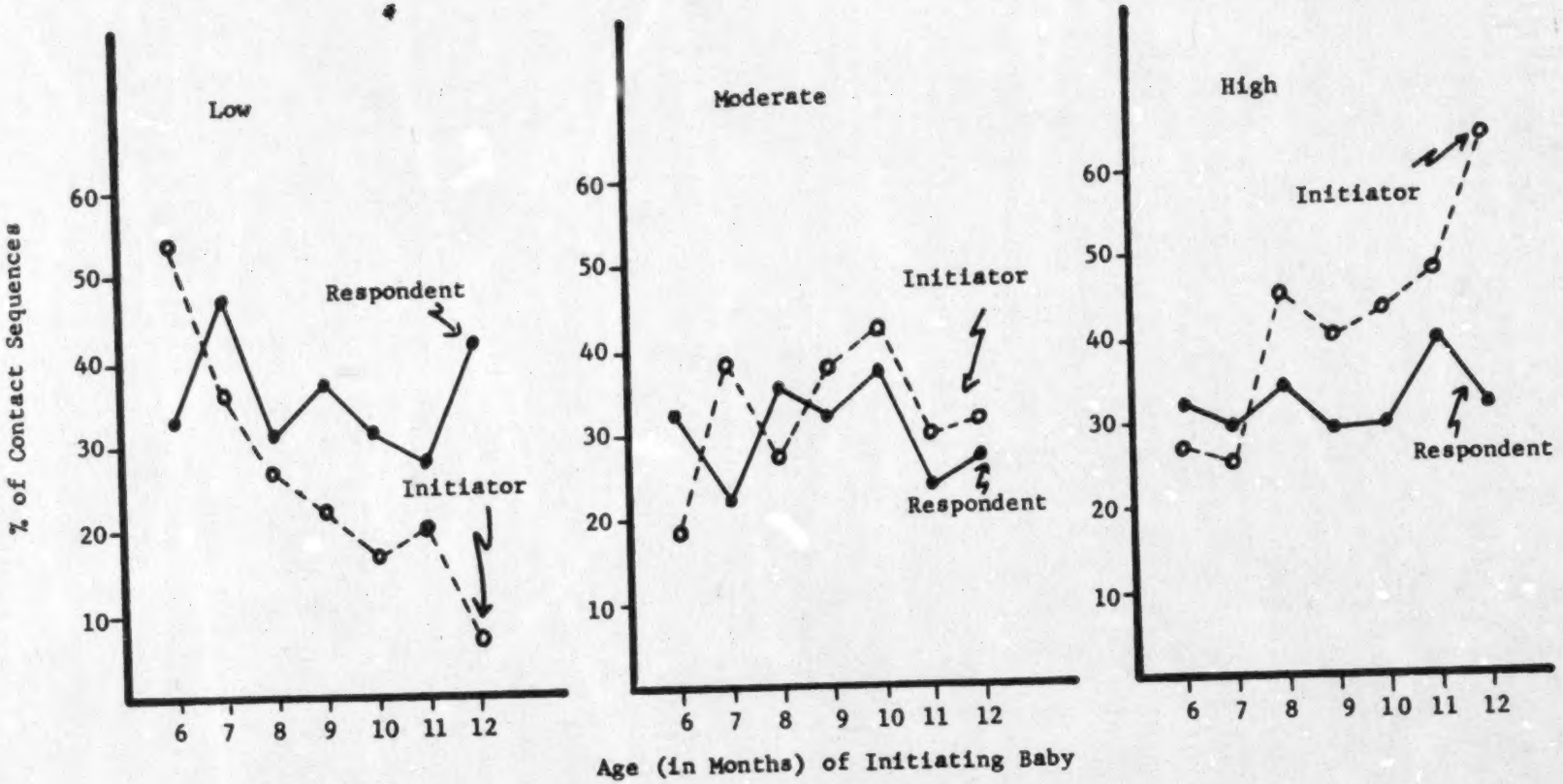

Figure 5. Highest Arousal Level Reached During Maintenance of Contact

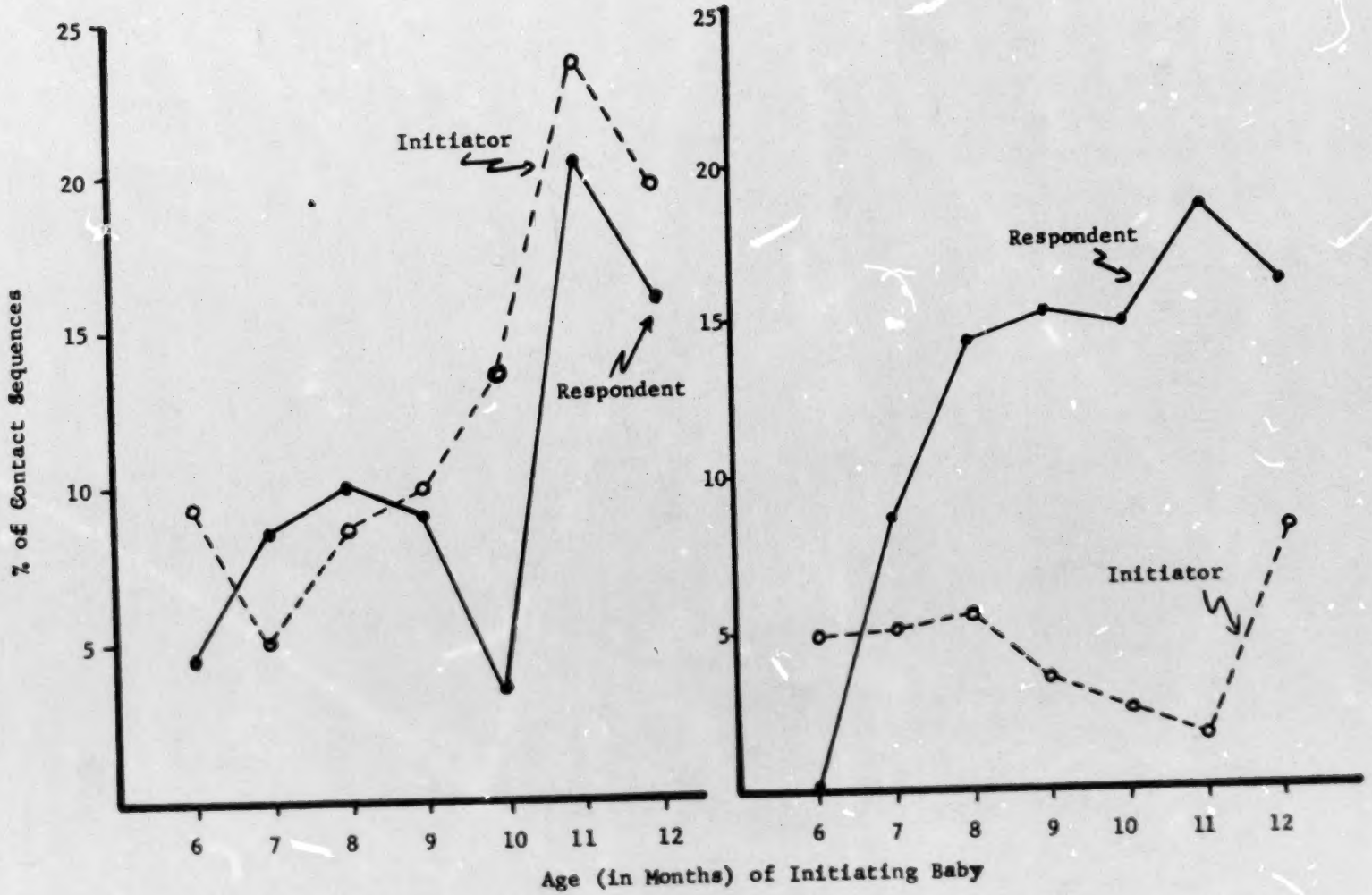

Figure 6. Expression of Affect During Maintenance of Contact